

The rejection of Claims 67-110 over Guenzer in view of Kaushik and Japan 52-89070 is traversed. None of the references set forth the, e.g., semiconductor device claimed herein.

Initially, the combination of Guenzer, Kaushik and JP '070 is insufficient given that, even if they were combinable in the manner suggested, and even if motivation for such combination were present, disclosure regarding limitations appearing in the pending claims is clearly lacking. In this regard note the paragraph 2e. at page 4 of the Official Action wherein "Official Notice" is taken regarding claim limitations present in the pending claims. The Office has taken Official Notice that the claimed devices/circuits were conventional and known to those of ordinary skill in the art for use in semiconductor layers for various reasons.

All of this is insufficient to support the taking of "Official Notice" as that term is contemplated in the MPEP, and the seasonable challenge to such Notice mentioned therein is hereby provided. In this case, the Notice taken is so general, and so non-specific, that it effectively prevents Applicants from rebutting the present rejection, which critically relies upon the Official Notice to supply particular claim limitations. Because for a proper *prima facie* case of obviousness to be presented the prior art must be considered as a whole, and motivation must exist for the proper combination of elements therein, it is essentially impossible for applicants to discuss whether and how the rejection might or might not meet these requirements. Applicants are entitled to evidence on the issue of Official Notice, and further are entitled to the Examiner's reasoning with regard to specific limitations in the pending claims. For example, how is Applicant to respond to the rejection of Claim 67, reproduced below:

67. A semiconductor device comprising:
- a monocrystalline semiconductor substrate;
 - an oxide layer formed overlying the substrate;
 - a monocrystalline compound semiconductor layer formed overlying the oxide

layer; and

a tunnel diode formed at least partially in the monocrystalline compound semiconductor layer,

wherein the tunnel diode comprises an intraband tunnel diode,

wherein the tunnel diode comprises a quantum well layer sandwiched between first and second tunnel barrier layers and the first and second tunnel barrier layers are sandwiched between an injection layer and a collection layer,

wherein the quantum well layer comprises GaAs and the first and second tunnel barrier layers comprise a material selected from AlGaAs and AlAs

said device further comprising a monocrystalline buffer layer interposed between the oxide layer and the monocrystalline compound semiconductor layer, and

wherein the oxide layer comprises an alkali earth metal titanate and the buffer layer comprises a material selected from the group consisting of GaAs and AlGaAs.

when the only information provided in the Official Action regarding, e.g., the intraband tunnel diode, is a non-specific and unsupported assertion that such components were known, perhaps in other contexts and different devices?

The reasoning is simply too vague. In fact, the reasoning is so vague, and so lacking in specifics, that it fails to present a *prima facie* case of obviousness supportable by reference to objective evidence. In this regard, Applicants again note their seasonable challenge to the taking of Official Notice, and require supplementation of the record along with a reasoned statement of rejection, or a Notice of Allowance.

Applicant understands that a double patenting rejection has been made over a series of applications. Applicant further appreciates the indication that the requirement will be held in abeyance until allowable subject matter has been indicated by the Examiner, and Applicant thus requests that this requirement be so held. As the Examiner will soon note, several applications in the original bulk-filing have now been abandoned.

Accordingly, Applicant respectfully requests the indication of allowable subject matter such that the double patenting issues can be addressed in this case.

Respectfully submitted,

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MARKED-UP COPY OF THE CLAIMS

IN THE CLAIMS

Claim 86 (cancelled).

Claim 87 (cancelled).

Claim 101 (cancelled).